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What is the risk of transmission of COVID-19 when delivering domiciliary care, and how effective are interventions that aim to minimise that risk?

A rapid review

What is the risk of transmission of COVID-19 when delivering domiciliary care, and how effective are interventions that aim to minimise that risk? A rapid review

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Review questions

1. What is the risk of transmission of coronavirus (COVID-19) when delivering domiciliary care?
2. Which strategies are effective in reducing the spread of COVID-19 when delivering domiciliary care?

Main messages

1. No studies were found describing the risk of transmission of COVID-19 when delivering domiciliary care (either from the care worker to care receiver or vice versa).
2. No studies were found describing the effectiveness of interventions that aim to reduce the spread of COVID-19 when delivering domiciliary care.
3. Professional opinions on how to safely deliver domiciliary care were identified in the literature; these support the application of general infection prevention and control practices, the use of risk assessments, ensuring staff are appropriately trained and employing an 'only when necessary' approach to face-to-face contact.

Background

Domiciliary care is care provided to people living in their own home to help support them to live independently. People receiving care include people from all ages and spectrum of conditions including physical and mental health problems and learning disabilities. The type of care provided includes, for example, assistance with daily activities (such as dressing, washing and household tasks) and changing wound dressings. In England, in 2018, Skills for Care estimated there were 9,400 domiciliary care services registered with the Care Quality Commission, with an estimated workforce of 520,000 (1). Due to the nature of the work, domiciliary care activities carry a risk of COVID-19 transmission, bi-directionally, between the care giver and care receiver. Certain people are at a higher risk of contracting COVID-19, such as the elderly and those with underlying health issues, and it is likely that there will be differences in relation to other factors such as ethnicity, place of residence (rural/urban and level of deprivation). A pilot study, conducted by Public Health England (PHE) and due to be completed on 19 June 2020, will estimate the prevalence of COVID-19 infections among domiciliary care workers in England (2).

A range of general guidance is available which can be used to support the safe delivery of domiciliary care through infection prevention and control practices. This includes, for example, guidance in relation to the appropriate use of personal protective equipment (PPE) (3), managing people with COVID-19 symptoms in the community (4), and guidance specifically related to domiciliary care (5).

A recent review undertaken by the COVID-19 Evidence team in PHE considered the effectiveness of 2 interventions to reduce COVID-19 transmission within care homes, one of which may also be relevant here (6). The review reported low-level evidence from 3 COVID-19 outbreaks in North America which suggested that restricting staff movement between care homes could help reduce transmission, but more high-quality evidence was needed. No evidence from domiciliary care settings was identified as part of that review.

Methodology

A scoping search was completed on 2 June 2020 to identify any existing reviews (systematic or rapid) related to these questions. We searched a number of COVID-19 review repositories and prospective review registers and a summary paper was produced. No relevant rapid reviews were identified.

A full literature search was then undertaken to look for systematic reviews and primary studies specifically focused on our 2 questions in the context of the COVID-19 outbreak, published (or available as pre-print) from any date, up until 2 June 2020 when the search was conducted. Our scoping search identified no relevant reviews on Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), so our full literature search additionally included Severe Acute

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Respiratory Syndrome Coronavirus One (SARS-CoV-1) and Middle East Respiratory Syndrome (MERS), to identify evidence that was transferable to the current pandemic and maintained a broad definition of 'home care'. See [Annexe A](#) for details of the methodology. The full protocol is available in [Annexe B](#).

Evidence summary

The search returned 916 records. After removal of duplicates (n=62), 887 records were screened by title and abstract, and 54 full texts. A Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) diagram is provided in [Annexe A](#).

No primary studies or systematic reviews were found that reported the risk of transmission of COVID-19, SARS-CoV-1 or MERS between patients and Healthcare Workers (HCW) in a domiciliary setting.

No primary studies or systematic reviews were found that examined the effectiveness of interventions designed to reduce the risk of transmission of COVID-19 between patients and HCWs when delivering care in a domiciliary setting.

Supplementary evidence on transmission and interventions in domiciliary settings

Within the literature screened for this review, there existed many position statements, professional opinions, and editorials on appropriate measures for safe interactions between HCW and patients. As these were not primary studies or systematic reviews, they have not been included in the main body of evidence for this review. These reports suggest that the practice of delivering domiciliary care should follow standard infection prevention and control procedures, with due regard to appropriate risk assessment measures. Further, there is a strong message to only visit a patient's home, or make face-to-face contact with a patient, where unavoidable. Some studies described the initiation and delivery of telemedicine as a means of minimising face-to-face contact with patients, but none assessed the impact of this in infection transmission (7,8).

Two additional studies did not meet our inclusion criteria but provide additional insight. Both are pre-prints (so have not been peer reviewed) and should be treated with caution. An observational study that compared characteristics of the spread of COVID-19 between 2 regions in Italy, Veneto, whom imposed guidance on minimising HCW contact with patients (in acute and community settings), saw a much lower proportion of HCW contributing to all cases than Lombardy (4.4% and 14.3% respectively) (9). A modelling study, that simulated family interactions with clinicians, observed in all cases that 'home visit' interactions greatly increased the rate of infection in the clinician compared to remote interactions, or only a single person visiting the clinician at the clinic. This interaction was not observed in the direction of clinician to

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patient however and noted limitations on the assumptions made about duration of contact in home visits (10).

Main findings: Professional opinion generalises the existing evidence of reducing the risk of infection between persons and applies it to a domiciliary care setting. Supporting adherence to infection prevention and control guidelines and appropriate training may also support this.

Limitations

This review is based on an electronic literature search only, and some studies may have been missed. In the absence of primary studies, it has been necessary to draw upon other forms of evidence and this needs to be treated with caution.

Conclusions

There is a lack of evidence related to the transmission of COVID-19 in domiciliary care. Where there are guidance and recommendations, they draw upon evidence from elsewhere and apply it to the domiciliary setting. It stands to reason that, any intervention that minimises contact in such a way as to reduce risk of transmission of COVID-19 is likely to do so. Especially if supported by appropriate training and adherence to existing Integrated Care Provider (ICP) guidelines. However, further investigation as to the efficacy of this approaches is required that it may solidify said reasoning with empirical evidence.

Disclaimer

PHE's rapid reviews aim to provide the best available evidence to decision makers in a timely and accessible way, based on published peer-reviewed scientific papers, unpublished reports and papers on pre-print servers. Please note that the reviews: i) use accelerated methods and may not be representative of the whole body of evidence publicly available; ii) have undergone an internal, but not independent, peer review; and iii) are only valid as of the date stated on the review.

In the event that this review is shared externally, please note additionally, to the greatest extent possible under any applicable law, that PHE accepts no liability for any claim, loss or damage arising out of, or connected with the use of, this review by the recipient and/or any third party including that arising or resulting from any reliance placed on, or any conclusions drawn from, the review.

References

1. Skills for Care. 'Workforce intelligence summary. Domiciliary care services in the adult social care sector 2018/19' n.d.
2. Marchant, E. 'Pilot point prevalence survey of COVID-19 among domiciliary care staff in England' 2020
3. Public Health England. 'Personal protective equipment (PPE): resource for care workers delivering homecare (domiciliary care) during sustained COVID-19 transmission in the UK. London: Public Health England' 2020. 14 p.
4. NICE. 'COVID-19 rapid guideline: managing symptoms (including at the end of life) in the community' 2020
5. Department of Health and Social Care. 'Guidance. Coronavirus (COVID-19): provision of home care' 2020
6. Public Health England. 'Limiting staff movement and cohorting of residents to reduce the transmission of Covid-19 in care homes: A rapid review'. 2020
7. Hutchings O and others. 'Virtual health care for community management of patients with COVID-19'. 2020, pages 2020.05.11.20082396
8. Israilov S and others. 'National Outreach of Telepalliative Medicine Volunteers for a New York City Safety Net System COVID-19 Pandemic Response'. Journal of Pain and Symptom Management 2020:
9. Binkin N and others. 'Protecting our health care workers while protecting our communities during the COVID-19 pandemic: a comparison of approaches and early outcomes in two Italian regions, 2020'. medRxiv pre print:
10. Cardinal R and others. 'Simulating a community mental health service during the COVID-19 pandemic: effects of clinician– clinician encounters, clinician–patient–family encounters, symptom-triggered protective behaviour, and household clustering'. medRxiv pre print:

Annexe A. Methods

Literature search

This report employed a rapid review approach to address the following research questions:

1. What is the risk of transmission of COVID-19 when delivering Domiciliary Care?
2. Which strategies are effective in reducing the spread of COVID-19 when delivering Domiciliary Care?

A preliminary scoping search identified no relevant reviews. It was therefore agreed that a literature search would be undertaken to identify primary research related to the research questions.

Protocol

A protocol was produced by the project team before the literature search began, specifying the research question and the inclusion and exclusion criteria. The protocol is available in [Annexe B](#).

Sources searched

Medline, Embase, medRxiv preprints, World Health Organisation (WHO) COVID-19 Research Database, Social Care Online (SCO).

Search strategy

Searches were conducted for papers published between 2003 and 2 June 2020.

Search terms covered main aspects of the research question, including terms related to the intervention. The search strategy for Ovid Medline is presented below.

Search strategy Ovid Medline

1. (home adj3 (care or caring)).tw,kw.
2. domicil*.tw,kw.
3. home visit*.tw,kw.
4. home monitor*.tw,kw.
5. home* nurs*.tw,kw.
6. community care.tw,kw.
7. health visitor*.tw,kw.
8. district nurs*.tw,kw.
9. community nurs*.tw,kw.
10. (patient* adj2 home*).tw,kw.
11. public health nurse*.tw,kw.
12. (care assistant* or healthcare assistant*).tw,kw.
13. ((care worker* or healthcare worker*) and (home* or visit* or communit* or out?reach)).tw,kw.
14. social care.tw,kw.
15. social worker*.tw,kw.
16. exp Home Care Services/
17. Caregivers/
18. exp Community Health Services/
19. House Calls/
20. Nurses, Community Health/
21. Social Workers/
22. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21
23. exp coronavirus/
24. exp Coronavirus Infections/
25. ((corona* or coron* or coronovirus*) adj1 (virus* or viral* or virinae*)).ti,ab,kw.
26. (coronavirus* or coronovirus* or coronavirinae* or CoV or HCoV*).ti,ab,kw.
27. (2019-nCoV or 2019nCoV or nCoV2019 or nCoV-2019 or COVID-19 or COVID19 or CORVID-19 or CORVID19 or WN-CoV or WNCov or HCoV-19 or HCoV19 or 2019 novel* or Ncov or n-cov or SARS-CoV-2 or SARSCoV-2 or SARSCoV2 or SARS-CoV2 or SARSCov19 or SARS-Cov19 or SARSCov-19 or SARS-Cov-19 or Ncover or Ncorona* or Ncorono* or NcovWuhan* or NcovHubei* or NcovChina* or NcovChinese* or SARS2 or SARS-2 or SARScoronavirus2 or SARS-coronavirus-2 or SARScoronavirus 2 or SARS coronavirus2 or SARScoronavirus2 or SARS-coronavirus-2 or SARScoronavirus 2 or SARS coronavirus2).ti,ab,kw.
28. (respiratory* adj2 (symptom* or disease* or illness* or condition*) adj10 (Wuhan* or Hubei* or China* or Chinese* or Huanan*)).ti,ab,kw.
29. ((seafood market* or food market* or pneumonia*) adj10 (Wuhan* or Hubei* or China* or Chinese* or Huanan*)).ti,ab,kw.
30. ((outbreak* or wildlife* or pandemic* or epidemic*) adj1 (Wuhan* or Hubei* or China* or Chinese* or Huanan*)).ti,ab,kw.
31. or/23-30
32. 22 and 31
33. ("middle east respiratory syndrome*" or "middle eastern respiratory syndrome*" or MERSCoV or "MERS-CoV" or MERS).ti,ab,kw.
34. ("severe acute respiratory syndrome*" or SARS).ti,ab,kw.

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35. ("SARS-CoV-1" or "SARSCoV-1" or "SARSCoV1" or "SARS-CoV1" or SARSCoV or SARS-CoV or SARS1 or "SARS-1" or SARSCoronavirus1 or "SARS-coronavirus-1" or "SARSCoronavirus 1" or "SARS coronavirus1" or SARSCoronavirus1 or "SARS-coronavirus-1" or "SARSCoronavirus 1" or "SARS coronavirus1").ti,ab,kw.
36. Middle East Respiratory Syndrome Coronavirus/
37. SARS Virus/
38. Severe Acute Respiratory Syndrome/
39. 33 or 34 or 35 or 36 or 37 or 38
40. 22 and 39
41. 32 or 40

Inclusion and exclusion criteria

Table 1. Inclusion and exclusion criteria

	Included	Excluded
Population	Domiciliary care workers Individuals receiving care at home	Non-human studies
Settings	Home settings	
Context	COVID-19 disease	Other diseases If no evidence is identified for SARS-CoV-2, evidence will be considered for other coronavirus such as SARS-CoV-1 and MERS.
Intervention / exposure	<ol style="list-style-type: none"> 1. Impact of domiciliary care workers on COVID-19 transmission 2. Impact of infection control measures and physical barriers on transmission 3. Impact of other ways of working (for example, cohorting) on transmission 	
Outcomes	<ol style="list-style-type: none"> 1. SARS-CoV-2 infection rate in domiciliary care workers 2. SARS-CoV-2 infection rate in individuals receiving care at home 3. Transmission of SARS-CoV-2 from domiciliary care workers 4. COVID-19 outbreaks in domiciliary care workers 	
Language	English	
Date of publication	Any date to present	
Study design	<ol style="list-style-type: none"> 1. Systematic and rapid reviews 2. Experimental or observational studies 3. Modelling studies <p>If relevant, data from UK surveillance reports might be included.</p>	<ol style="list-style-type: none"> 1. Guidelines 2. Opinion pieces
Publication type	Published and pre-print	

Screening

Title and abstract screening was done by 3 reviewers. All 3 reviewers screened the first 100 references and disagreements were discussed. The remaining titles/abstracts were split between the 3 reviewers and screened independently. Full text screening was done by 2 reviewers (each screened half of the references). [Figure 1](#) illustrates this process.

Data extraction and quality assessment

Data extraction was done by 2 reviewers independently.

Due to the rapid nature of the work, a validated risk of bias tool was not used to assess study quality. However, major sources of bias were noted when reviewing the papers.

Figure 1. PRISMA diagram

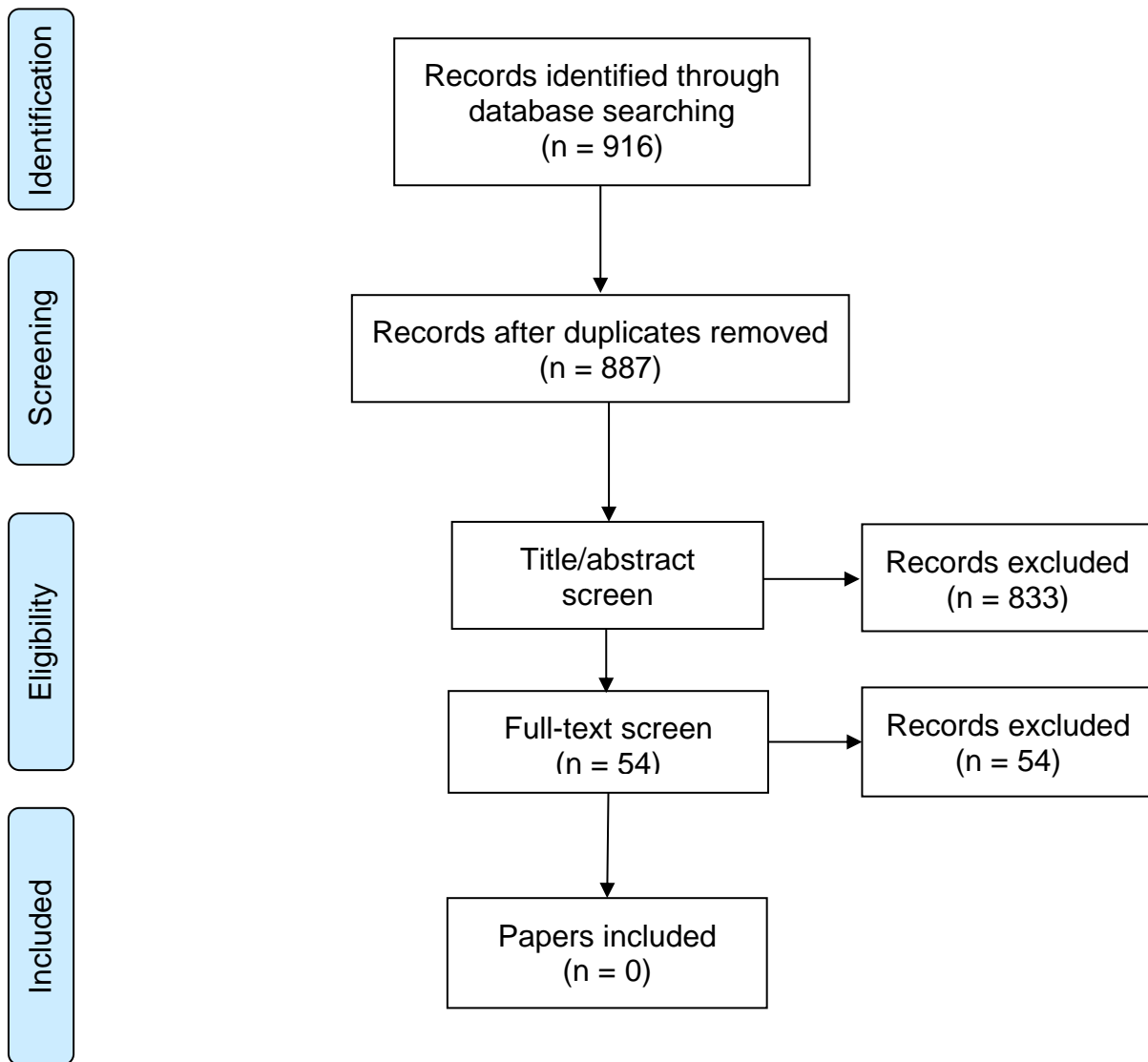


Figure 1. PRISMA diagram alt text

A PRISMA diagram showing the flow of studies through this review.

From the original literature search (search between 2003 to 2 June 2020), there were $n = 0$ papers included in the review.

From identification of studies via databases and registers, $n = 916$ records identified from databases.

From these, $n = 29$ duplicate records were removed before screening. This left $n = 887$ records screened, of which $n = 833$ were excluded, leaving $n = 54$ papers sought for retrieval. All identified reports were retrieved.

Of these $n = 54$ papers, $n = 54$ were excluded. This left $n = 0$ papers to be included in the review.

Annexe B: Protocol

Home care and COVID-19: rapid review protocol

Notes

- A wide range of terminology can be used for home care, including domiciliary care and home care nurse, and definitions might also vary across countries; for this review we will include any evidence related to workers providing care to people living in their own homes who require additional support in order to maintain their independence and quality of life.
- Different types of workers can be involved in home care, with different levels of training in relation to infection control; for this review we are interested in all types of worker, including social workers.
- Cohorting refers to the practice of isolating COVID-19 patients from those who are not infected; in this context it means having domiciliary care workers working only with patients infected with COVID-19, and other workers working only with patients not infected.

Review questions

Q1. What is the risk of transmission of COVID-19 from domiciliary care workers?

Q2. Which strategies can reduce the spread of COVID-19 by domiciliary care workers?

Eligibility criteria

	Included	Excluded
Population	Domiciliary care workers Individuals receiving care at home	Non-humans studies
Settings	Home settings	
Context	COVID-19 disease	Other diseases If no evidence is identified for SARS-CoV-2, evidence will be considered for other coronavirus such as SARS-CoV-1 and MERS.
Intervention / exposure	1. Impact of domiciliary care workers on COVID-19 transmission 2. Impact of infection control measures and physical barriers on transmission 3. Impact of other ways of working (e.g. cohorting) on transmission	
Outcomes	1. SARS-CoV-2 infection rate in domiciliary care workers 2. SARS-CoV-2 infection rate in individuals receiving care at home	

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	Included	Excluded
	3. Transmission of SARS-CoV-2 from domiciliary care workers 4. COVID-19 outbreaks	
Language	English	
Date of publication	2003 to present	
Study design	1. Systematic and rapid reviews 2. Experimental or observational studies 3. Modelling studies If relevant, data from UK surveillance reports might be included.	1. Guidelines 2. Opinion pieces
Publication type	Published and pre-print	

Sources of evidence

Medline, Embase, medRxiv preprints, WHO COVID-19 Research Database

Search strategy Ovid Medline

1. (home adj3 (care or caring)).tw,kw.
2. domicil*.tw,kw.
3. home visit*.tw,kw.
4. home monitor*.tw,kw.
5. home* nurs*.tw,kw.
6. community care.tw,kw.
7. health visitor*.tw,kw.
8. district nurs*.tw,kw.
9. community nurs*.tw,kw.
10. (patient* adj2 home*).tw,kw.
11. public health nurse*.tw,kw.
12. (care assistant* or healthcare assistant*).tw,kw.
13. ((care worker* or healthcare worker*) and (home* or visit* or communit* or out?reach)).tw,kw.
14. social care.tw,kw.
15. social worker*.tw,kw.
16. exp Home Care Services/
17. Caregivers/
18. exp Community Health Services/
19. House Calls/
20. Nurses, Community Health/
21. Social Workers/
22. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21
23. exp coronavirus/
24. exp Coronavirus Infections/
25. ((corona* or coronovirus*) adj1 (virus* or viral* or virinae*)).ti,ab,kw.
26. (coronavirus* or coronovirus* or coronavirinae* or CoV or HCoV*).ti,ab,kw.

27. (2019-nCoV or 2019nCoV or nCoV2019 or nCoV-2019 or COVID-19 or COVID19 or CORVID-19 or CORVID19 or WN-CoV or WNCov or HCoV-19 or HCoV19 or 2019 novel* or Ncov or n-cov or SARS-CoV-2 or SARSCoV-2 or SARSCoV2 or SARS-CoV2 or SARSCov19 or SARS-Cov19 or SARSCov-19 or SARS-Cov-19 or Ncover or Ncorona* or Ncorono* or NcovWuhan* or NcovHubei* or NcovChina* or NcovChinese* or SARS2 or SARS-2 or SARSCoronavirus2 or SARS-coronavirus-2 or SARSCoronavirus 2 or SARS coronavirus2 or SARSCoronavirus2 or SARS-coronavirus-2 or SARSCoronavirus 2 or SARS coronavirus2).ti,ab,kw.
28. (respiratory* adj2 (symptom* or disease* or illness* or condition*) adj10 (Wuhan* or Hubei* or China* or Chinese* or Huanan*)).ti,ab,kw.
29. ((seafood market* or food market* or pneumonia*) adj10 (Wuhan* or Hubei* or China* or Chinese* or Huanan*)).ti,ab,kw.
30. ((outbreak* or wildlife* or pandemic* or epidemic*) adj1 (Wuhan* or Hubei or China* or Chinese* or Huanan*)).ti,ab,kw.
31. or/23-30
32. 22 and 31
33. ("middle east respiratory syndrome*" or "middle eastern respiratory syndrome*" or MERSCoV or "MERS-CoV" or MERS).ti,ab,kw.
34. ("severe acute respiratory syndrome*" or SARS).ti,ab,kw.
35. ("SARS-CoV-1" or "SARSCoV-1" or "SARSCoV1" or "SARS-CoV1" or SARSCoV or SARS-CoV or SARS1 or "SARS-1" or SARSCoronavirus1 or "SARS-coronavirus-1" or "SARSCoronavirus 1" or "SARS coronavirus1" or SARSCoronavirus1 or "SARS-coronavirus-1" or "SARSCoronavirus 1" or "SARS coronavirus1").ti,ab,kw.
36. Middle East Respiratory Syndrome Coronavirus/
37. SARS Virus/
38. Severe Acute Respiratory Syndrome/
39. 33 or 34 or 35 or 36 or 37 or 38
40. 22 and 39
41. 32 or 40

Screening

Depending on number of hits, screening on title and abstract will be undertaken in duplicate by 2 reviewers for at least 10% of the eligible studies (up to 100% depending on resources).

Disagreement will be resolved by discussion.

Screening on full text will be undertaken by 1 reviewer and checked by a second.

Data extraction

Summary information for each study will be extracted and reported in tabular form. This will be undertaken by 1 reviewer.

Risk of bias assessment

The risk of bias for each included review will be assessed by 1 reviewer using AMSTAR 2. Due to the rapid nature of the work, validated tools will not be used for primary studies; however, papers will be evaluated based on study design and main source of bias (mainly population, selection, exposure and outcome).

Synthesis

A narrative synthesis will be provided.

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